

Moses Lake TMDL Advisory Committee Meeting
February 27, 2003; 6:30 – 9:00 p.m.
Moses Lake Fire Station

Attendance:

21 people signed the attendance sheet (13 advisory committee members or alternates)

Advisory Committee Members

Keith	Bell	Grant Co. Health
Pascal	Bolduc	landowners
Regan	Bonato	Alternate - MLIRD
Tom	Dent	Air Applicators
Elayne	Fuller	Alternate - ECBID
Larry	Gadbois	EPA Region 10
Bill	Graedel	Lincoln Co Commissioner
Anne	Henning	City of Moses Lake
Stephen	Jones	Columbia Basin Crop Consultants
Jeff	Korth	WDFW
David	Lundgren	Lincoln Co. CD
Jim	Parsons	Aquaculture
Paul	Stoker	GWMA

Other Attendees

Pat	De Grand
Mark	Dixon
Mac	McLanahan
Eric	Mularski
Jack	Rensel
Dale	Schulze
Dean	White
Bill	Witt

Meeting discussions:

Marcie began the meeting by stating the goal for the meeting was to have a “one-on-one” session with Jim Carroll from Ecology’s Environmental Assessment Program and author of the Moses Lake TMDL technical report.

Before the question and answer session began, Marcie asked if there were any comments or concerns regarding the meeting notes from last month. There were no changes or comments made to last month’s meeting notes, but it was suggested that a distribution list of the Advisory Committee members be made available electronically in the next meeting notes. Bill Graedel asked that he not be included on the email list if attachments were being sent out as they cause problems with his server. Jim Parsons also asked that Trout Lodge Inc. receive paper copies as well as email notices of all the future meeting notes.

Marcie asked if there were any other comments before we began the Q and A session. It was announced to the group from Trout Lodge Inc. that there had been a request to postpone future meetings until Senator Bob Morton and Representative Jane' a Holmquist could finish the legislative session and attend our Advisory Committee meetings. At that time Marcie handed out a letter from Senator Bob Morton and Representative Jane 'a Holmquist that stated this request (this letter is enclosed).

It was also brought up by the interests related to farming that with the delay of the meetings, per Senator Bob Morton and Representative Jane' a Holmquist's request, the advisory committee would be losing at least 5 members. Springtime would be the start for the farming industry and they usually only have one day off a week and work with the sun. Marcie let the group know that she would relay this message to the Senator and Representative, and also let them know that they could also contact them to relay their views.

Then Marcie introduced Jim Carroll and the floor was then opened for questions. The questions or comments are listed below with their corresponding answers or reply. Please feel free to edit or comment on these before or at our next meeting. It was difficult to capture the entirety of each question and/or answer. Much of the discussions were condensed down for clarity.

- Q. In regards to the model, how do we know that phosphorus or nitrogen is the limiting nutrient and that the system is light limited? Doesn't the nitrogen to phosphorus ratios change? How can we discern what the least limiting nutrient and how limiting that nutrient will change by adding or subtracting nitrogen from the system?
- A. Phosphorus was determined as the limiting nutrient based on studies and direct communication with Dr. Eugene Welch who has spent over 30 years studying the area. If nitrogen is limited rather than phosphorus, the blue-green algae are still able to survive by fixing their own nitrogen. By limiting phosphorus to a 50µg/L target, blue-green algae are not able to produce large masses that create water quality problems.
- Q. Is there a cyclical variation of phosphorus to nitrogen levels or ratios?
- A. The phosphorus to nitrogen ratios vary from year to year by the water column mixing. The flushing or dilution ratio changes annually. Last year the dilution rate was approximately 2.5 times the lake volume.
- C. The technical report identifies the main sources and tries to solve for 1 out of 10 years or 90th percentile or the critical years. 1980 was used as the critical year to determine the percent amount phosphorus needed to be reduced in order to reach the 50µg/L criterion to protect the lake.
- R. Correct.
- Q. Where does the idea of needing to protect for the critical year come from?

- A. The requirement of protecting for critical years comes from the Federal Clean Water Act. Specifically 40 CFR 130.7.c.1.

http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_40/40cfr130_00.html

Each State shall establish TMDLs for the water quality limited segments identified in paragraph (b) (1) of this section, and in accordance with the priority ranking. For pollutants other than heat, TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical WQS with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. Determinations of TMDLs shall take into account critical conditions for stream flow, loading and water quality parameters.

What is really being established here is a reasonable "worst-case" scenario. The 90th percentile design flow used in the Moses Lake TMDL evaluation is based on standard application of the once in 10 year critical loading. In doing so, Ecology is accepting a 10% exceedance probability of the criterion being violated. Use of a model requires an assumption about design conditions. Ecology has traditionally required the use of 7-day low flows with a recurrence interval of 10 years (7Q10 model) for defining critical conditions for steady-state discharges to riverine systems. This definition of critical conditions is established in the State of Washington water quality standards (Chapter 103-201A-020 Definitions. WAC) and is defined in Ecology's EA Program "TMDL Development Guidelines" (Publication No. 97-315). In addition, it is supported by EPA documents (Technical Guidance Manual for Performing Wasteload Allocation, Book VI, Design Conditions, EPA 440/4-86-014; and Guidance for Water Quality-based Decisions: The TMDL Process, EPA 440/4-91-001).

A margin of safety is implicit in the design conditions as well. Using a conservative design condition, accounts for uncertainty about the relationship between the pollutant loads to the lake and the in-lake water quality. At a minimum, the fact that we may already be establishing a "relatively non-conservative" TP criterion of 50 ug/L for Moses Lake supports using the "worst-case" 90th percentile load for establishing load allocations for the TP TMDL.

Q. Why can't we rely on irrigation water?

- A. Bureau of Reclamation has to protect for flooding and in some years the system can only handle so much water. (Marcie suggested that it would be helpful for someone like Dick Erickson and Bill Gray to explain the irrigation system to the Advisory Committee at a future meeting)

- C. In regards to the pie chart on page 86 of the Moses Lake Total Maximum Daily Load Phosphorus Study, this chart is based on 2001 information and it

is misleading in that we need to budget for a year unlike 2001, but more like 1980.

- R. Jim Carroll stated that the pie chart could have been modeled for 1980 or another critical year. He didn't mean for it to be used to predict future years.
- Q. Does runoff from Crab Creek and Rocky Ford Creek contribute phosphorous that may cause early blooms?
- A. Phosphorus from large runoff events in the February-March time period would be consumed by the algae and then would die off and sink to the bottom. The phosphorus may be used again during internal loading of the Lake.
- Q. Does internal loading to the lake matter and why doesn't it have a contribution on the pie chart? Does the lake become hypoxic (lack of oxygen) in the summer?
- A. Internal loading in most lakes is predictable, but in Moses Lake it is shallow enough that it mixes several times a month and varies from month to month. This variability makes it difficult to predict the exact effect internal loading contributes to the phosphorus problem.
- Q. Are we trying to achieve something that isn't achievable? Why is Moses Lake on the 303(d) list?
- A. The actual standards for Moses Lake based on the Water Quality classification criteria, state that Moses Lake should be at a 35µg/L level for phosphorus. Based on the special conditions that Moses Lake has, it has been determined that 50µg/L is more appropriate. Moses Lake was placed on the 303(d) list in 1998 for exceeding Washington State water quality standards in phosphorus as well as nitrogen. Moses Lake has improved since then, but still remains on the list until the TMDL is submitted and approved by EPA.
- C. The years that are the problem are going to be the years when there is no dilution water.
- R. Dilution program masks the problem of there being too many nutrients in the lake.
- Q. There are already ongoing projects that are working to clean up nutrients. Should we wait and see or proceed with the TMDL? Rocky Ford Creek has the same contributions it has had since before the hatcheries were there.
- A. We need to see some significant decreases of phosphorus contributions in the tributaries if we are going to see some improvements.
- C/Q. Many of us see the source of phosphorus as natural from Rocky Ford Creek; Ecology sees it as human contributions. We need to better identify the source of the high phosphorus coming from Rocky Ford Creek. How

can we make decisions about reducing phosphorous if we don't know where it is coming from?

- R. There are many diffuse sources to which high phosphorus levels may be coming from in Rocky Ford Creek and other sources. There were some ideas in Charles Pitz's report on ground water. Crab Creek has seen some significant changes over the years in reducing phosphorus loading due to agriculture changes. Further identification of sources would definitely help.
- C. How do we know that irrigation water has raised ground water levels? Right now it seems as if we are mining more phosphorus from the soils that we put back. What is driving the phosphorus down if it is indeed coming from agriculture?
- R. On page 21 of the Moses Lake TMDL Phosphorus Study, Figure 8 shows monthly mean flows from Rocky Ford Creek. The aquifer in this area is most likely recharged by water from local irrigation. However, the baseline discharge from the spring probably varies with fluctuating regional water table levels, which most likely reflect variations in climatic conditions as well as seasonal irrigation patterns. Pre-project ground water information is limited for the study area.
- C. Steven Jones offered to supply a database of soils for the area and also suggested that more background information be collected from monitoring wells.
- R. This is something Ecology will look into further.
- Q. What about urban contribution to the phosphorus loading?
- A. There are contributions from urban sources. Mac McLanahan, who worked for the City for many years, had called Marcie and wanted to share information that may be helpful regarding the sewer system in Moses Lake.

This final question lead into the comment from Marcie that she thought it would be beneficial if the next few meetings were spent educating the committee about each represented interests' involvement in Moses Lake and possible contributions to phosphorus. Paul Stoker brought up the idea that it would be much more meaningful if certain goals were accomplished after each presentation was given. He listed the goals as (1) what has been done in the past, (2) relationship of issue to the TMDL process, (3) potential costs, and (4) what future BMP's may be useful.

The committee agreed by consensus that these information/goal presentations would be very useful in educating the committee as well as completing the SIS step by step, interest by interest.

Marcie informed the group that she would be sending out the meeting notes and keeping the Advisory Committee updated as to when the meetings would start up again.